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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,425	06/09/2006	Sung-Ki Cho	51876P1098	4855

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EXAMINER

OSBORNE, LUKE R

ART UNIT	PAPER NUMBER
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2123

MAIL DATE	DELIVERY MODE
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12/15/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,425	Applicant(s) CHO ET AL.	
	Examiner LUKE OSBORNE	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/25/10</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/15/10 has been entered.

Claim Status

2. Claims 1, 3 and 4 are pending in the instant application.
Claims 1, 3 and 4 stand rejected.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 8/25/10. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,127,970 to Lin, hereinafter "Lin".

Regarding claim 1 Lin discloses a satellite simulation modeling system based on an interface standard model, the system comprising:

a satellite subsystem standard model for simulating operations of physical satellite subsystems [Lin: Figure 1, item 30, the integrated GPS/INS system 30 to be tested (Column 6, lines 53-63)];

a flight software module for generating a control signal changing operation state of the satellite subsystem standard model [Lin: Figure 1, item 10, Produce real time trajectory data from the 6DOF trajectory generator 10 and send the real time trajectory data to the coupled real time GPS/IMU emulation system 20. The real time trajectory data are defined by the user (Column 6, line 63 – Column 7, line 2)];

an interface standard model for converting data transmitted from the satellite subsystem standard model and the flight software module into data to receiving components and transmitting the converted data to the receiving components, the interface standard model including a data processor

[Lin: Figure 1, item 20, Generate output data including real time IMU data, identical to the real IMU device in a designed mission, by the IMU model of the coupled real time GPS/IMU emulation system 20, and the GPS measurements by the GPS receiver model in the GPS/IMU emulation system 20. Format the GPS measurement data and convert the real time IMU data into IMU simulated electronic signals by an IMU signal generator in the coupled real time GPS/IMU emulation system 20. The IMU signal generator is in fact an interface board in an emulation computer provided in the coupled real time GPS/IMU emulation system 20. The IMU signal generator produces the IMU simulated electronic signals that are identical to those produced by the real IMU device 32 in the integrated GPS/INS system 30. Process the simulated GPS measurements and generated IMU simulated electronic signals by a standard interface and a regulator and connector circuit to form suitable electrical specifications and connector pin arrangement that is compatible to the integrated GPS/INS system 30 (Column 7, lines 3-21)];
and

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a model managing means for generating the satellite subsystem standard model and the interface standard model as independent component objects and controlling each component object to perform satellite simulation

[Figure 1, item 40, Collect test data from the integrated GPS/INS system 30, during the test, by a data acquisition and performance evaluation system 40 which includes a computer. Usually the comparison between the reference 6DOF trajectory data and the integrated GPS/INS resolved vehicle trajectory data is done to determine whether the integrated GPS/INS system 30 works properly and to evaluate its performance (Column 7, lines 28-34)]

wherein the interface standard model includes data processing information and data link information, and wherein the data processing information and the data link information are modified when the satellite subsystems standard model is changed, the data processing information being at least one of a data format, a data structure and a data attribute [Lin: Column 7, lines 3-21].

Regarding claim 3 Lin discloses the system as recited in claim 1, wherein the interface standard model includes:

the data processor for converting data transmitted from the satellite subsystem standard model and the flight software module to data appropriate to the receiving component based on characteristics and a structure of the data; a data information provider for extracting the data link information and the data processing information stored in a data storage and providing the data link information and the data processing information to the data processor [Figure 2, items 221 and 222, Column 7, line 61 – Column 8 line 15];

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the data storage for storing the data link information and the data processing information [Lin: The GPS satellite constellation simulation 212 reads orbit parameters, satellite clock parameters, and atmospheric parameters from ephemeris data 211, which are stored in a GPS/IMU emulation computer (Column 8, lines 16-32)]; and

a data port for receiving the data from the satellite subsystem standard model and the flight software module and transmitting the data processed in the data processor to the receiving components [Lin: Figure 2, items, 22 and 24].

Regarding claim 4 Lin discloses the system as recited in claim 3, wherein the data processor converts telemetry data transmitted from the satellite subsystem standard model to data appropriate to the flight software according to characteristics and a structure of the telemetry data and converts telecommand data transmitted from the flight software module to data appropriate to the satellite subsystem standard module based on telecommand data processing information according to characteristics and a structure of the telecommand data [Lin: Figure 2 item 23, The interface board 23 includes a GPS emulation input/output interface 231 and an IMU emulation input/output interface 232 (Column 7, lines 35-60)].

Response to Arguments

Applicants Arguments (claim 1)

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In contrast, the claim recites "a satellite subsystem standard model for simulating operations of physical satellite subsystems." There is no teaching that the integrated GPS/INS system 30 simulates operations of physical satellites subsystems. Instead, using the received simulated GPS measurements and IMU simulated electronic signals, the position and location of the integrated GPS/INS system 30 is determined.

Examiners Response

The Examiner has considered Applicants response and found it unpersuasive. Lin discloses that "Another object of this invention is to provide a coupled real time emulation method for positioning and location system, which is adapted to predict and evaluate the dynamic performance of an global positioning/inertial system through a simulated test that can make the follow on real flight test safer and will greatly reduce the number of the real flight test. Consequently, the operation and test cost of the simulated method is low for it does not need the expensive motion device in the test system. The maintenance of the test system is simplified." (Column 3, lines 11-20)

There is a simulation of the operations of the physical satellite subsystems.

Applicants Argue

Applicant submits that an "aircraft" is "a machine or device capable of atmospheric flight" such as "an airplane" (Webster's II, New Riverside University Dictionary, aircraft). The Applicant submits there is no teaching in Lin of satellite

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subsystems and moreover, no teaching of the GPS/INS system 30 being used to simulate "the operations of the physical satellite subsystems."

Examiners Response

The Lin does not expressly define aircraft to exclude satellites. Further the definition of "aircraft" can be as simple as anything that flies. The Examiner considers satellites to fly. Definitions are attached for "aircraft" and "do satellites fly". Furthermore Applicants invention pertains to ground testing navigation systems for a vehicle which is the same as Lin.

Applicants Argue (claim 1)

In contrast, the claim recites "an interface standard model for converting data transmitted from the satellite subsystem standard model and the flight software module." Given that the coupled real time GPS/IMU emulation system 20 provides GPS measurements and IMU signals to the integrated GPS/INS system 30, which the Examiner alleges to be "the satellite subsystem standard model," the coupled real time GPS/IMU emulation system 20 does not convert "data transmitted from the satellite subsystem standard model."

Examiners Response

The Examiner has considered Applicants arguments and found them unpersuasive. Lin discloses the limitations in the following

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[Lin: Figure 1, item 20, Generate output data including real time IMU data, identical to the real IMU device in a designed mission, by the IMU model of the coupled real time GPS/IMU emulation system 20, and the GPS measurements by the GPS receiver model in the GPS/IMU emulation system 20. Format the GPS measurement data and convert the real time IMU data into IMU simulated electronic signals by an IMU signal generator in the coupled real time GPS/IMU emulation system 20. The IMU signal generator is in fact an interface board in an emulation computer provided in the coupled real time GPS/IMU emulation system 20. The IMU signal generator produces the IMU simulated electronic signals that are identical to those produced by the real IMU device 32 in the integrated GPS/INS system 30. Process the simulated GPS measurements and generated IMU simulated electronic signals by a standard interface and a regulator and connector circuit to form suitable electrical specifications and connector pin arrangement that is compatible to the integrated GPS/INS system 30 (Column 7, lines 3-21)

The real time GPS/IMU emulation can also be realized by two computers, one is used for GPS emulation, another one is used for IMU emulation. The synchronization is also one key problem in the coupled real time GPS/IMU emulation system using two computers which can also be obtained by the coupled emulation method in this patent. For the case of using two computers to emulate GPS and IMU, the real time trajectory data from one 6DOF generator that drives both of the two computers to emulate GPS measurements and IMU data at the same time. Figure 2];

Figure 2 show how item 10's (flight software module) output is converted into data useable by item 30 (satellite subsystem model).

Applicants Argue (claim 1)

There is no teaching of that the coupled real time GPS/IMU emulation system 20 includes data processing information and data link information... the data processing information being at least one of a data format, a data structure and a data attribute.

Examiners Response

The Examiner has considered Applicants arguments and found them unpersuasive. Lin discloses that "The Ethernet network controller board 21, as shown in FIG. 2, is used to receive real time vehicle flight trajectory data from the 6DOF trajectory generator 10. The 6DOF trajectory generator 10 and the real time IMU emulation system 20 can also been connected by a standard serial communication port such as RS-422/485, according to the application requirement." (Column 12 lines 54-60). The

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data link information is inherent in the communication system used by Lin, and the data processing information is just the data passed on to the various components as necessary, and this data is one of a data format, a data structure or a data attribute.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUKE OSBORNE whose telephone number is (571)272-4027. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul L. Rodriguez can be reached on (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Luke Osborne/
Examiner, Art Unit 2123

/Jason Proctor/
Primary Examiner, Art Unit 2123